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Analysis of the Efficiency of Preventive Programmes

Abstract: Preventive actions are subject to continuous evaluation by different groups of their recipients. The question of which kind of tools can be used to assess prevention is more and more common. The aim of the article was not to discuss the validity of programs, but to raise the issue of assessing the effectiveness and efficiency of implemented prevention. The analysis of prophylaxis can be carried out from various planes. Based on the literature review, the effectiveness of prophylaxis in the field of management and economics was conceptualized. The article presents a proposal for the evaluation of prevention programs, including its levels.

Key words: efficiency, effectiveness, preventive programs

Introduction

This study is of theoretical character and presents an analysis of the notion of preventive programmes' efficiency. The aim of this paper is to systematize the notion of assessment of such programmes' efficiency. However, the question remains how the efficiency of a preventive programme should be assessed. Should its effectiveness, accuracy, durability, postponed effects, legitimacy, usefulness, productivity and so forth be taken into consideration? Many different measures of assessing prevention may be applied but it is worth to systematise the notion of programmes' assessment and discuss the point of using it. In this study, we have pointed at some tools of assessing preventive programmes' efficiency that may be used. In particular, we have discussed the research methods, defined the notion of efficiency and presented the instruments that may be used in its assessment in the area of preventive activities. We have also made an attempt to descri-

be and compare various measures and tools that may be used in case of efficiency measurement.

The article attempts to answer the following questions:

- Do we need studies of preventive programmes' efficiency?
- How can we determine (measure) the efficiency of preventive programmes?
- How can we define the efficiency of a preventive programme?
- What are the surfaces of analysis of preventive programmes' efficiency?

The present considerations were based on an analysis of Polish and foreign literature and on studies of the practice of conducting evaluation of preventive programmes. In this study, we have made an attempt to apply the knowledge gathered in management sciences, in particular in the public sector, and to point at the possible ways of its application to assess the efficiency of preventive programmes. We have also systematized the notion of efficiency with respect to prevention and pointed at the importance of efficiency in preventive activity's assessment, taking into account the knowledge from the area of evaluation.

The definition of preventive programmes – the goal of preventive programmes as a condition for their assessment

Prevention is 'an activity connected to applying various preventive means in order to prevent the occurrence of accidents, damages, disasters, etc.' [*Mały Słownik Języka Polskiego* 1997, translated by the author]. The essence of prevention is intervening in order to diminish the risk of occurrence of phenomena such as:

- addiction (to psychoactive substances, behavioural addiction: to the Internet, gambling, sex, shopping, etc.);
- other problematic and risky behaviours (aggression and violence, school problems, health problems, etc.);
- social maladaptation and exclusion [Latkowska 2014, p. 15].

Actions that are planned in the form of preventive programmes are taken in social environments where many forces and variables coexist and it is difficult to point at simple cause-and-effect relationships. This is why preventive activities by their nature belong to those difficult to quantify. It is not easy to identify the effects of the conducted prevention, as they are often intangible. In addition, the effects of preventive actions may be noticeable or perceptible in the longer term. We can find some significant barriers of the undertaken actions that often concern determining the effects and outcomes of the implemented programmes. In spite of the awareness of existence of the abovementioned difficulties (complications), some attempts to increase the efficiency and effectiveness of preventive actions are made. The first stage of these attempts should be

determining what preventive actions consist in and then indicating various measures of assessment of the implemented prevention.

Preventive programmes should be subject to assessment of the undertaken actions' impact and of their ability to introduce changes in the environment where they are implemented. What remains is also the question of assessment of the programme's efficiency from the point of view of the attained effects and of the analysis of the programme from the perspective of the borne expenses (efforts, costs¹). One of the methods of assessing preventive programmes is evaluation, which is 'a process consisting in using the methods of socio-economic research to systematically gather data, analyse, interpret, assess and inform on the effectiveness of programmes' [Olejniczak 2005, p. 35; Szymańska 2012, p. 60]. Evaluation is a process of studying and assessing the value of the programme and its aim is to understand, improve and develop the actions undertaken within the programme. Evaluation may be conducted from the point of view of various assessment criteria, such as:

- effectiveness (connected to the following questions: Have the goals of the programmes been achieved? To what extent? Have the applied action brought the expected outcomes?);
- efficiency (connected to questions like: What was the cost of the achieved effects and results? Could the results have been better with the same costs?);
- relevance (the basic question that can be mentioned here: Have the programme met the needs of the target group of the programmes' beneficiaries?);
- sustainability (raising the following questions: What are the chances that the introduced changes will bring some effects in the longer term? Will the undertaken actions last after the programme's end?);
- postponed impact (analysing the last group of questions: What changes has the programme caused in the longer term? What are the long-term effects of the programme?) [Latkowska 2014, p. 4].

The discussed criteria form different levels described as types of evaluation. The analysis may concern various surfaces of preventive activities, that is: the assumptions of the program, the process, its results and efficiency. Evaluation of the process focuses on the assessment of the quality of the programme. It is connected to studying the fulfilment of the assumed indices of task performance and finding the answer to the question whether the programme met the needs of its participants and was addressed to an appropriate group of recipients. Evaluation of the process is connected to the analysis of the

¹ Cost – is a necessary amount of resources (possessions) of an individual, expressed in values, that has to be used in order to obtain a certain useful effect; expense – is an expenditure of financial means, in cash or non-cash, that has the ability to liquidate obligations; effort – a purposeful use of resources connected to an individual's activity; if the results of the use is a useful effect, effort transforms into cost.

following questions: How was the programme realized? Has the programme been successfully realized? Who has taken part in the programme? Which elements of the programme had been well designed and which not? Evaluation of the result focuses on the effects of the programme. It studies whether the expected change has occurred and what indicates that the change has occurred as well as whether it has been caused as a result of the programme's implementation. Evaluation of the results attempts to determine whether the programme has achieved the assumed goals. It is connected to the assessment of the achieved effects after the end of the programme – direct goals as well as an analysis of the programme's general effects and results postponed in time. Questions concerning efficiency appear at every stage of the conducted evaluation [Boyd 1995; Latkowska 2014, p. 4].

In many countries, some attempts are made to create standards of the implemented preventive programmes. The richest experience in this question has been gathered in the USA, where the Society for Prevention Research, which deals with analysing effective preventive strategies and sets the standards for programmes, had been founded.

Preventive programmes are subject to evaluation. However, it seems important to discuss the importance of assessing the programme's efficiency. The assessment of preventive activity concerns the following questions: Can the efficiency and effectiveness of a preventive programme be measured at all? What is the aim of conducting assessment? Is it an assessment of financial expenses, or only a formal assessment (resulting from legal regulations, procedures of financing the programmes)? The need of quantifying and assessing the point and credibility of the expenses and borne costs is noticed. It would also be constructive to point at the problems concerning the assessment of efficiency and the methods of its measurement with respect to preventive activity.

The problem of assessment of preventive programmes' efficiency

In various aspects of the human functioning, some attempts to assess the pursued actions are made. It concerns both the business sphere (private) and the public or social ones. In the business sphere, some broadly elaborated methods and tools of assessment of economic subjects' activity are used, that is of profit, index analyses, etc. Similarly, in the public sector some tools of assessment of subjects' activity and actions are introduced. On one hand, the public sector is assessed through the lens of budget's implementation and the use of public funds, and on the other hand, budget's implementation must be connected to efficiency and effectiveness of the undertaken actions. Subjects which undertake preventive actions cope with similar issues. The question arises whether it is possible to measure the efficiency of a programme at all. We should consider

how efficiency can be defined and what measures of efficiency assessment of preventive activity may be used. In addition, some preventive programmes are financed from the public funds and the rules of spending them (distributing) are regulated by the law. It seems legitimate to analyse the importance of efficiency of preventive programmes by applying the tools used in management.

In the analysis of preventive programmes, we should define a few notions that may be helpful in assessing their efficiency. We can point here at some notions used in sciences such as management and economy that concern the efficiency of an activity. Efficiency is a multi-dimensional notion and is difficult to define. According to P. Samuelson and W. Norhaus [1999, p. 478], efficiency is the most effective way of using resources in the society to address some lacks and needs of people. According to E. Pasour, efficiency is a subjective notion and should not be defined or measured without a determined goal and without the decision-makers' knowledge [Pasour 1981, p. 135; Bielawa 2013, p. 29]. Efficiency is the result of the undertaken actions, described by the relation between the achieved results and borne expenses. It is an important tool of measuring the effectiveness and productivity of an action. In addition, it is used as a measure of the degree to which the set goals are achieved [Skrzypek 2012, p. 314].

The word 'efficiency' is derived from Latin where *efficientia* means the power to accomplish something. In Polish, this term (*efektywność*) is also derived from the Latin word *effectivus*, which means effective [Tokarski 1980, p. 172], and means a positive results, efficacy, proficiency or effectiveness [Szymczak 1978, p. 516]. The problem with its definition consists in the existence of many synonyms of this word. In the Polish dictionary we can find the following synonyms: *wydajność, skuteczność, sprawność, wydolność, racjonalność, operatywność, produktywność, produkcyjność, pożyteczność*. Similarly, in English there are many terms used as equivalents for efficiency such as 'effectiveness', 'efficacy', 'performance', etc. [Pyszka 2015, p. 15].

Efficiency is considered by many authors as a controversial category and, at the same time, the most important in terms of evaluation. Efficiency is compared to productivity and effectiveness [Supernat 2005, p. 174]. In turn, the term 'productivity' means: working well, using the resources wisely without unnecessary waste and organized in an appropriate way. Analyses of the productivity of an action are considered on the grounds of praxeology [Zieleniewski 1975, p. 233]. The concept of 'effectiveness' is linked to accomplishing things, with a desired, positive result and succeeding in actions [Griffin 2002, p. 36]. Effectiveness is a component of a productive activity, next to profitability and economical use of resources, where an action is called effective when it leads to the cause that was set as its goal [Griffin 2002, p. 98].

Measuring efficiency is a subject of analyses in economic and management sciences. Efficiency makes it possible to determine the consequences of actions, assess the use of

resources, and the degree to which undertaking an action matches its goals, for the sake of which the action (programme) was undertaken. In economic sciences, it is assumed that efficiency is the ratio of the output (results) to the input. Here, efficiency is discussed next to effectiveness. In turn, effectiveness is defined as the extent or degree to which the assumed goals are achieved. Economic efficiency is 'the result of a subject's activity or of a given enterprise, stemming from the ratio of the output to the input' [Jastrzębska 2016, p. 45]. We can carry out a qualitative and/or quantitative measurement of the effect in relation with the goal of the undertaken actions. Here, we can point at two methods of action that are considered efficient. Either 'with a given input of means we can obtain a maximum degree of goal fulfilment (the principle of maximum effect/maximum effectiveness) or with a given degree of goal fulfilment we can use the minimum input of means (the principle of least effort/of economy of means)' [Zieleniewski 1975, p. 20].

In management sciences, efficiency is connected to the subject's ability to current and long-term adaptation to changes in the environment as well as an economical and productive use of the possessed resources to fulfil the desired goals. Often, the notion of efficiency is identified with the notion of productivity connected to effectiveness and profitability (economy of means), where effectiveness is connected to endeavours to obtain a result the same as the set goal. In turn, profitability is determined by the ratio of the result to the input of effort made in order to achieve it [Penc 1997, p.100].

Quantifying efficiency most often boils down to a measurement based on numeric values. However, certain activities, for instance such as preventive programmes, are less easily subject to classic economic measurements of efficiency so we should search for other methods that would allow to define the effectiveness of their impact or results. In literature, we can also find analyses concerning efficiency juxtaposed with productivity and effectiveness but also with efficacy of action and level of preference [Pyszka 2015, p. 17].

To sum up, 'efficiency' is an *appropriate* thing done in an *appropriate* way, where both productivity and effectiveness are important. Here, productivity means doing things in an appropriate way and effectiveness – doing appropriate things [Stoner, Freeman, and Gibert 2001, p. 2]. Efficiency with reference to a programme may be the productivity or effectiveness of its preparation and it may be the measure of the degree to which the programme has achieved the desired goals [Stoner, Freeman, Gilbert 2001, p. 24]. The 'goal' may be defined as conscious or, in a given moment, unconscious anticipated future states (things) considered desirable, for which we are heading in our actions [Zieleniewski 1975, p. 16]. So, in case of a preventive programme, the goal may be an attempt to influence behaviours and attitudes in a certain environment.

Efficiency in economic terms is determined by the ratio of the input to the obtain result and has a very narrow meaning. This ratio can be easily indicated on the basis of data. However, some interpretational problems may arise from the point of view of fulfil-

ment of the expected (satisfying) results, in particular in case of subjects and enterprises undertaken beyond the business sector. The lack of clearly defined effects or results may cause some problems in determining efficiency in the economic sense.

In case of prevention, it seems important to determine whether a given programme is rational and effective from the point of view of fulfilment of a given goal, and to be more specific, from the point of view the programme's recipients. The key role is played by its beneficiaries. The recipients on one hand influence the goal of the prepared programme, and on the other hand, may also influence the assessment of efficiency of the actions taken during its progress. The assessment of a programme is made not only by the very fact of pursuing specific actions within the programme but also by the way in which it has been done. With reference to preventive programmes, it seems legitimate to use the term of social efficiency, in case of which, apart from purely economic criteria, we may also use social assessments (measures, factors). However, regardless of the issues concerning the analysis of the fulfilled goal, a programme may be considered efficient when it allows for obtaining the maximum results with a given level of accessible means (*the principle of maximum effect/maximum effectiveness*) or when it guarantees the minimum use of means in order to obtain certain effects (*the principle of least effort/of economy of means*) [Nawrońska 2015, p. 38].

The most difficult question is connected to the assessment of fulfilment of tasks planned within the programme and the selection of appropriate measures. The measures which are used allow for the assessment of the basic issues connected to the programme fulfilment but they do not exhaust the full spectrum of possible and expected effects of its fulfilment. Very often, the effects of preventive programmes are postponed in time, so it is difficult to study the outcomes of given actions. In addition, financial means (funds) that are transferred for prevention are often lower than it would result from the needs of different groups. We may observe a difference between the amount of necessary financial funds and the amount of sums that can be transferred for preventive activity, which imposes increasing the efficiency of the use of the possessed resources without decreasing the effectiveness of the programmes. Those who implement preventive programmes have to make decisions concerning, among other things, issues such as which actions should be taken, to what degree they should be taken and how particular actions should be taken. This is why it seems legitimate to apply the criteria of economic efficiency to assess preventive programmes. We can use here criteria such as costs/benefits or costs/effects [Przewodnik po analizie kosztów..., 2014]. Attempts should be made to determine the singular costs of particular actions, determine the entire sum of the borne expenditures (expenses), and determine the total value of effects. It is also worth trying to determine the indices of economic efficiency by determining the eco-

nomic net present value (ENPV), the economic rate of return (ERR), and the social return on investment (SROI).

The selection of particular measures of indices depends to a large extent on the type of the preventive programme, actions taken within the programme and the source of financing (formal requirements). The assessment of efficiency may be helpful in selecting the programmes and allow for the choice of the most efficient ones in the conditions of limited financial resources. It is of particular importance in case of preventive programmes financed from the public funds which are more and more often assessed from the point of view of the criterion of rational expenses.

The suggested surfaces of analysis of preventive programmes' efficiency

The question of assessing preventive programmes' efficiency is complex. As we have discussed before, we may notice many difficulties in defining and measuring the efficiency of preventive programmes. In particular, from the point of view of various goals pursued in prevention but also of various stakeholders (recipients, performers, contractors, etc.).

We cannot discuss the efficiency of preventive programmes unless, on one hand, we determine the outcomes (effects) of the programme's actions, and on the other hand, the expenses borne for these actions. To make an assessment of preventive programmes' efficiency the following elements must be taken into consideration:

- perspective (who assesses efficiency, who or what is assessed and what is the aim of assessment);
 - actions (product) (what kind of actions are assessed, what effect is assessed);
 - expenses (what resources have been engaged during the programme's progress)
- [Furtak-Niczyporuk, Drop 2013, p. 55; AHRQ 2008].

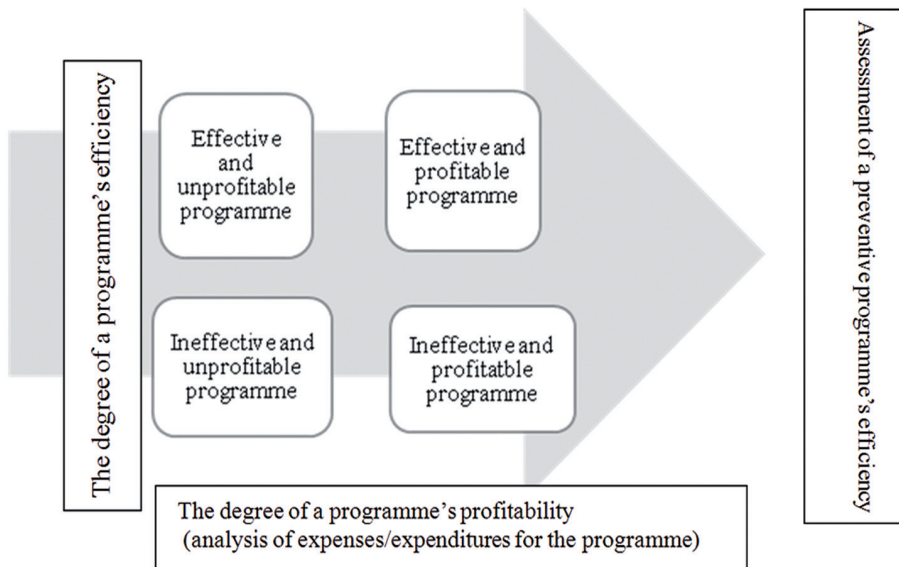
With respect to preventive programmes, it seems legitimate to assess their efficiency from the point of view of their goals. This is because these programmes are launched in order to fulfil certain goals. In this context, efficiency should be identified with the notion of productivity whose elements are: effectiveness and profitability (rationality or economical use of the resources) [Zieleniewski 1975, p. 23]. What is more, productivity may be analysed in the following perspectives: synthetical (general), as a positive feature of action (e.g. an effective action, an economical one) or universal, where each element of action is considered separately.

It seems important to distinguish the surfaces of efficiency analysis in terms of productivity of action. We may distinguish four levels of efficiency assessment with respect to preventive programmes, that is financial (assessment of expenses), operational (con-

nected to assessment of effectiveness – based on the process evaluation), of direct result and of dynamics (connected to assessment of social effects, or postponed in time).

The abovementioned surfaces of analysing efficiency agree with the understanding of efficiency in economic terms [Bielawa 2013, pp. 28–29]. Economic efficiency may be defined as ‘a result of activity determined through the ratio of the output to the input of a given factor or of a set of these factors’. A feature of efficiency is expediency of action. As we have already mentioned, we must distinguish between two terms here, that is: effectiveness and profitability (rationality, economical use of means). Effectiveness and profitability of preventive programmes are notions that can be considered independently. The graph below presents the possible variants of assessing the programmes from the point of view of their profitability and effectiveness. Effective actions would ‘lead to the effect that was expected as a goal’ [Kotarbiński 1982, p. 11]. Profitability may be increased either through orientation towards the expenses (minimizing them) or through orientation towards the effects (maximizing them). However, we must remember that not every effective action is connected to a rational action and *vice versa*.

Graph 1. The possible variants of assessment of a programme’s efficiency through an analysis of its productivity (effectiveness and profitability)



Source: own elaboration.

The aim of assessing efficiency should be to find an answer to the question whether the borne expenses have translated into effects to a satisfying degree. A preventive programme may be effective, or reach the expected goal, but that does not mean that it was profitable (rational). An efficient programme is a programme that has reached the expected goal with the minimum expenses or a programme whose expenses have guaranteed reaching the maximum goals. Subjects implementing preventive programmes often face the alternative:

1. Is it better to reach the goal with the minimum expenses? Then, the programme is profitable from the point of view of the expenses.
2. Is it better to maximize the expected goal (effect) regardless of the amount of expenses if then the programme is effective?

Each programme must be subject to a singular assessment. It is important to make a conscious assessment of its efficiency. The assessment of efficiency must not be made in isolation from the assessment the programme's effectiveness and rationality. Only a holistic assessment of the programme's efficiency, of both the effects and expenses, creates a basis for the assessment of a preventive programme's efficiency.

Conclusion

Many analyses concerning assessment of efficiency may be found. Literature presents the definitions and the methods of measurements which take into account various dimensions of analysis. Preventive programmes are subject to evaluation connected to assessment of their effectiveness. However, the assessment of effectiveness by itself does not seem sufficient. Only the possibility to compare the obtained effects to the borne expenses creates a basis for an assessment of the programme's efficiency. A programme may be considered efficient when it allows for the maximum effects with a given level of accessible means or when it guarantees the minimum use of means in order to achieve certain effects. The assessment of efficiency should be connected to finding the answer to the question whether the borne costs (expenses) have translated into the observed effects in a satisfying degree. The measurement of efficiency of programmes should be made on four surfaces, that is: financial, operational, of result and of dynamics. It should be indicated whether the programme was effective or profitable. It is worth stressing that most of the programmes require the elaboration of a set of individual indices that would serve the assessment of their efficiency. It would be advisable to create some universal model indices that would serve the assessment of preventive programmes' efficiency and that would meet the needs of particular programmes in a universal way.

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